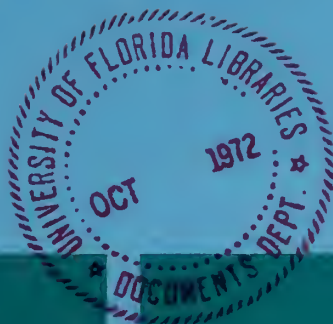


D101.71:42

# ARROWHEAD

COMBAT DEVELOPMENTS COMMAND



August 1972





## Commander's Call

---

### LET'S GET RID OF ALL COMBAT DEVELOPMENTS GOBBLEDGOOK!

I can not over-emphasize the importance of good communication in CDC—meaningful terms, not the fancy or fuzzy CDC terminology that turns off listeners.

There is much talk of the need for better communication between young people and their elders, between one segment of society and another, and between one nation and another. The same must be said of Combat Developments Command and the rest of the Army—including the all-important Army in the field.

Names for new Army organizations (like TRICAP) and materiel (like UTTAS) will undoubtedly still be “issued” by higher commands. We can live with this. However, CDC is declaring war on the unnecessary use of jargon. The human temptation to develop and use a CDC language that only specialists can understand must be overcome. Above all, do not develop an acronym to describe a study, a model, a field experiment or a test. This practice has to be reversed and short, definitive titles used. This crusade demands the conscientious effort of *everyone* within the Combat Developments Command.



JOHN NORTON  
Lieutenant General,  
U.S. Army  
Commanding

6



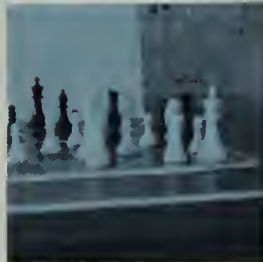
10



14



19



22



24



# ARROWHEAD

COMBAT DEVELOPMENTS COMMAND

August 1972

No. 42



## ARTICLES

- 2 Down The Organization
- 6 Containers and Army Transportation
- 10 Bridging The . . . Gap With The MGB
- 12 What Would Happen If. . .
- 14 Turning Night Into Day
- 17 Tabletop Strategy
- 19 Jiffy Games . . . Fantasy or Functional
- 22 The Changing Role of CDC's Inspector General
- 24 ADP And The Management of Combat Developments

## REGULAR FEATURES

- 27 The Forum
- 28 Point of the Arrow
- 29 God and Country
- 30 Spot Reports

Picture Credits: Pages 19-23, Gregory. All other photos, US Army Photos.

## ABOUT THE COVERS:

**FRONT**—This is a graphic depiction of the many aspects of wargaming. Graphic work was done by the CDC Graphics Art Branch.

**BACK**—Every American is urged to use his constitutional right to vote.

The ARROWHEAD is an authorized publication of the US Army Combat Developments Command, Ft. Belvoir, Virginia 22060, under the provisions of AR 360-81. Published monthly by means of photo offset reproduction, circulation is 3600 copies. The views expressed herein are not necessarily those of the Department of the Army. Material can be submitted to the Information Officer. Phone: Autovon 354-3982 or commercial area code 703-664-1455. Drafts are accepted with pictures or sketches whenever available.



# DOWN

# THE

# ORGANIZATION

by Colonel James L. Riffe

One of the enormous tasks confronting the Army today is how to maintain a combat ready force that is properly manned and equipped to meet worldwide requirements in the face of continually diminishing resources. Recent policy statements by the Army Chief of Staff and other actions directed by Headquarters, Department of the Army place increasing emphasis on the need for “downing the organization”.

The Army’s Combat Developments Command, which is responsible for the development of organizations for the “Army in the field”, has initiated a program to insure that personnel and equipment requirements reflected in field organization are based on the criteria of “minimum mission essential”.

Among the military services, the Army is unique in its documentation of organization requirements. While the Navy, Marine Corps, and Air Force publish separate manpower and equipment documents, the Army uses a single system—the Tables of Organization and Equipment (TOE). Approximately 65 percent of the Army’s total military manpower are assigned to units based upon these tables. Their impact upon Army resources is therefore obvious.

The TOE is probably one of the most widely known, yet least understood, documents in the

Army. It prescribes the normal mission, capabilities, organizational structure and personnel and equipment requirements for a unit deployed or committed to sustained combat. It provides a standard method of documenting the organizational structure of the Army in the field and the relationship between unit requirements and unit authorizations. The TOE is also the basis for the Modified Tables of Organization and Equipment (MTOE)—which is used to alter the basic TOE in order to reflect the particular needs of a unit or group of units. It is also used to organize units to meet personnel and equipment constraints.

The point is that most TOE are developed under a concept which visualizes the employment of a unit anywhere in the world. The MTOE may be used to adapt the TOE to a specific geographical area of the world or to meet special missions or operational requirements.

CDC does not participate in the development or approval process of MTOE. This is strictly between the major Army commanders and Department of the Army (DA). CDC does, however, review all DA-approved MTOE for organizational trends which may have worldwide application.

The development of Tables of Organization

Colonel Riffe (RET) is the former Director of the Organization Directorate of Headquarters, Combat Developments Command, Ft. Belvoir, Va.

and Equipment is based upon common accepted principles of organization. Like the business enterprise Army TOE reflect the principles of:

- Unity of objective
- Efficiency
- Span of management (control)
- Responsibility
- Delegation
- Unity of command
- Authority
- Division of work
- Functionalization
- Balance
- Flexibility

In addition to these principles, which influence

the design and structure of most large corporations in America today, the Army has developed certain principles or guidelines which may be considered peculiar to military organizations.

Noteworthy among these principles are those first defined by General Lesley J. McNair, Commanding General, U.S. Army Ground Forces from 1942 to 1944 (see Figure 1). General McNair developed a set of "guidelines" which are particularly appropriate in today's climate of austerity and resource constraints. He demanded that units be effective without excess personnel and equipment, and directed his subordinates to question everything proposed for inclusion in TOE.

### GUIDELINES FOR UNIT ORGANIZATION

1. Concentrate a maximum of men and materials in offensive striking units capable of destroying the enemy's capacity for resistance.
2. Reduce non-combat soldiers to a minimum.
3. Reduce non-tactical overhead to a minimum.
4. Make tactical staffs small and efficient.
5. Reduce the size of headquarters companies and staffs.
6. Eliminate unnecessary links in chain of command.
7. Reduce paperwork.
8. Use verbal orders.
9. Streamline combat units for quick decisive action.
10. Assign to units only personnel and equipment which are always needed.

11. Pool at higher headquarters that which is occasionally needed.

12. Assign minimum essential national resources to weapons and units which are primarily defensive in character.

13. Discourage the organization of special type units. Avoid the assignment to combat units of excessively specialized personnel who are useful only on certain occasions.

14. Eliminate unneeded links in the chain of supply and administration.

15. Divisions and corps should be lean and mean. Relocate overhead machinery to Army level.

16. Whenever unit strength is reduced, weapon strength must be increased.

figure 1

Although General McNair's principles are still valid and remain essentially unchanged, the problems facing the Army today are much more complex and require even greater effort to insure maximum return on its resources.

When the Combat Developments Command submits a TOE to Headquarters, Department of the Army for approval it reflects an average of 265 days of development, processing, analysis, and review effort. Its development began in one of CDC's 19 branch or functionally oriented agencies. Most of these agencies are collocated with their counterpart Army Materiel Command

(AMC) test board and Continental Army Command (CONARC) service school, as part of the Army's Center Team concept. Thus, in its initial stages, TOE development is coordinated with these major Army commands at the grass roots level in order that equipment and training implications may be identified early in the development cycle.

The TOE is one of the final products of the Combat Developments Command and as such reflects much that has been accomplished throughout the combat developments cycle. It reflects approved concepts and doctrine, lessons

## TABLES OF ORGANIZATION AND EQUIPMENT (TOE)

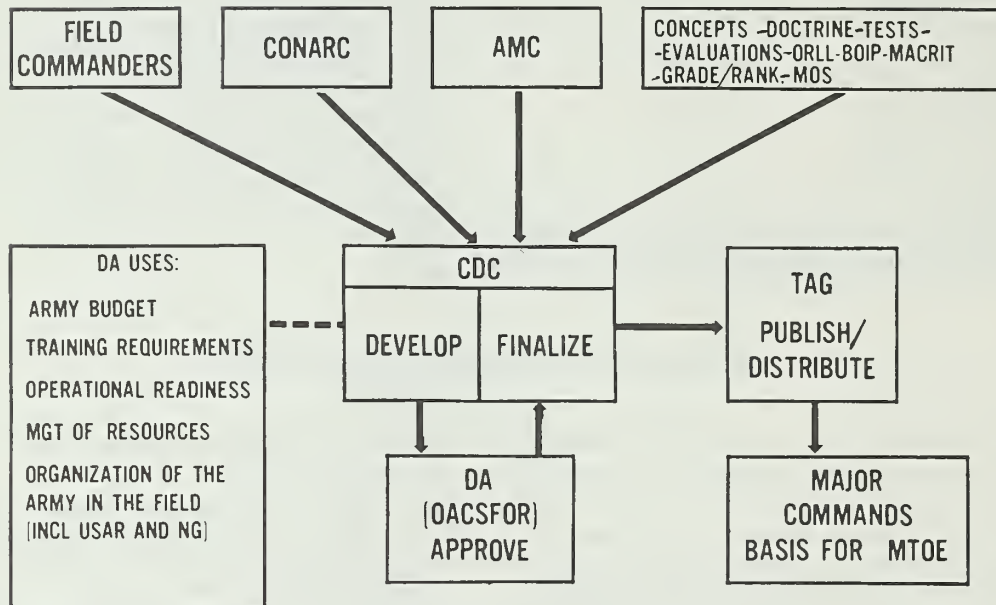


figure 2

learned during combat, the results of field tests and evaluations, and personnel and equipment requirements. It also documents the grade/rank and Military Occupational Specialty (MOS) structure of the Army in the field. (see Fig. 2).

Personnel and equipment requirements in TOE are based upon the mission of the unit, its designed capabilities, and upon the duties and responsibilities of the personnel who will be needed to insure that the unit can achieve its objectives.

The Combat Developments Command produces two other organization phase documents which are primary determinants in arriving at personnel and equipment requirements in TOE.

Manpower Authorization Criteria (MACRIT) studies identify enlisted non-supervisory combat support and service type positions for TOE. For example, a MACRIT study will indicate how many personnel are required to maintain a tank or helicopter. It also establishes criteria for many other positions such as radio operators, legal clerks, military policemen, and parachute packers. Of the 472 three-digit MOS codes in the Army, 123 or about 26 percent are covered

by the criteria established through CDC developed MACRIT studies. (see Fig. 3).

Basis of Issue Plans (BOIP) list the requirements for a new or improved item of equipment for each type TOE unit in the Army structure. The BOIP also indicates the estimated cost of the item, the number and type (by MOS) personnel required for its operation, and, it will also show where applicable, other equipment which the new item will replace. The BOIP is therefore a key element in the acquisition of Army materiel. (see Fig. 4).

In November 1970, CDC established at its headquarters a formal board to review all TOE prior to their submission to Headquarters, Department of the Army for final approval. The primary purpose of this board is to insure that TOE reflect only minimum mission essential personnel and equipment. The TOE Board has developed certain principles of austerity against which all TOE are analyzed and evaluated.

In addition to the permanent TOE Review Board the Combat Developments Command has convened special boards to review all current TOE with the objective of making further re-



ductions in communication equipment and wheeled vehicles.

Last December almost 200 persons representing most of the major commands in CONUS met at Fort Belvoir, Virginia, to attend an Organization Phase Symposium sponsored by the Combat Developments Command. The symposium theme "The Development of More Efficient and Economical Organizations" provided the main thrust for the conference and work shop discussions lasting over a three-day period. During the symposium additional austerity guidelines for TOE, MACRIT and BOIP development were identified; the Combat Developments Command Directorate of Organization was designated as a clearing house for new ideas, techniques, procedures, and methodologies in achieving additional resource savings in organization; and plans initiated to encourage unit commanders, staff officers, and individual soldiers to submit direct to the Combat Developments Command suggestions for improving the organization of the Army in the field.

The Army's newest divisions, as reflected in the H-series TOE of 1970, require an average of about 16,500 men at the 100 percent manning level. With the exception of the two airmobile units, Army divisions in Vietnam averaged about 22,000 men at the full strength level. So while current divisions reflect a substantial reduction over Vietnam requirements much remains to be done and the Combat Developments Command is continually analyzing personnel and equipment requirements to identify further reduc-

### MANPOWER AUTHORIZATION CRITERIA [MACRIT]

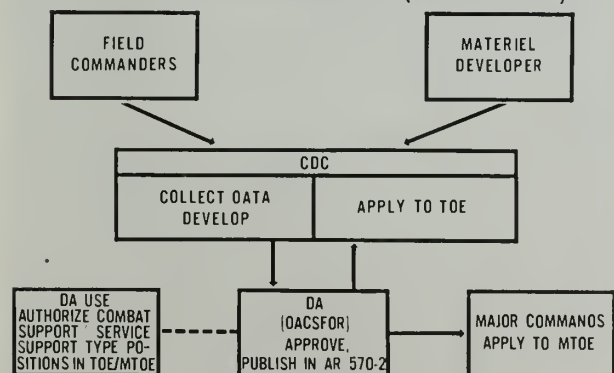


figure 3

### BASIS OF ISSUE PLAN [BOIP]

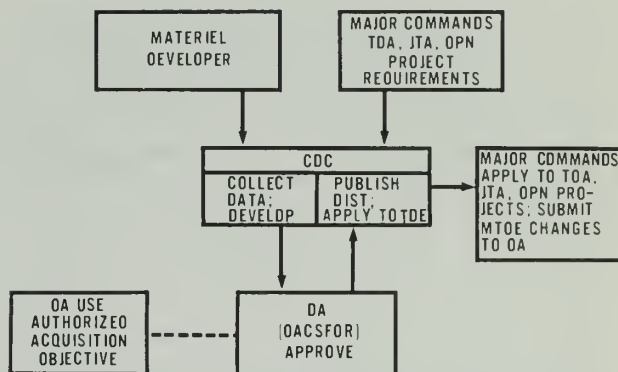


figure 4

tions without jeopardizing the ability of a unit to accomplish its designed wartime mission.

It is not likely that the Army can continue to afford a 16,500 man division. The Combat Developments Command is therefore looking at smaller units. On 1 May 1971, the 1st Cavalry Division (Airmobile) was reorganized as a Triple Capability (TRICAP) Division with a strength of approximately 13,000 men at Fort Hood, Texas, where it is currently being evaluated. However, even as the TRICAP Division is being tested, CDC is studying a new family of divisions in which there would be only two or three (as opposed to the current six) different types:

- A heavy division of about 12,000 men.
- A light division of approximately 10,000 men.
- An experimental division.

The light divisions would be quite small—with battalions of no more than 500 men and companies of 100 men or less. The light division would be characterized by strategic deployability and tactical mobility, while the heavy division would provide firepower comparable to current armored divisions with fewer personnel. These smaller units mean better command and control capabilities and better use of oncoming technology.

While these divisions will not represent a change in the traditional role and missions of the Army, they will reflect changes in strategy, concepts and doctrine. When approved for development, TOE for these units will be structured to insure that the Army receives the maximum return on its resources.

# CONTAINERIZATION

by LTC E.W. Goyne

The container revolution in the transportation industry has resulted in a windfall to the military services in the form of substantial dollar savings. These savings have been realized through reduced packaging costs, reductions in pilferage and damage to cargo, lower transportation costs, and a very substantial savings in manpower because of reduced handling requirements. One example of this reduced handling requirement is in the transportation terminal service company which discharges and backloads water transport vessels.

The existing Army table of organization and equipment (TOE) for a terminal service company states a capability for that unit to discharge 720 short tons of break bulk cargo in a 24-hour, around-the-clock operation. This company has 323 officers and men which equates to about a 2-ton-per-man-per-day production for the company. While discharging cargo at this rate, the company has no backload capability. This means that a terminal or terminals which receive some 14,000 to 15,000 short tons of cargo per day would require 20 terminal service companies or 6,460 officers and men to discharge the cargo. Presently, approximately 65 to 70 percent of all military cargo being shipped overseas is containerized. If our full potential for containerization is realized, about 80 percent will eventually be containerized. This means, that of the 14,000 to 15,000 short tons arriving overseas some 11.5 thousand short tons will be containerized. The average 20-foot container can hold approximately 20 short tons of cargo. This equates to about 960 containers. The US Army Combat De-

velopments Command Transportation Agency is presently developing a terminal service container handling company which will have the capability of discharging 960 containers in a 24-hour, around-the-clock operation while simultaneously backloading the same number. This unit will require approximately 200 officers and men. Thus, 200 men will discharge 80 percent of the cargo with a production rate of better than 57 short tons per man. In addition, they will simultaneously backload 960 containers which may or may not be loaded. These 200 men will discharge the same amount of cargo as approximately 5,168 personnel of 16 terminal service companies.

The above savings only pertain to handling the cargo at the terminal. The manpower and equipment savings which can be realized in line haul trucking operations will not be as dramatic as those savings in terminal operations. However, the development of new line haul equipment by commercial carriers can be another windfall to the military in the form of savings in manpower and equipment. It can also provide Transportation Corps line haul truck units a flexibility which is required to achieve maximum efficiency.

The present medium truck company, which is the primary line haul Army transportation truck unit, consists of 5-ton tractors and M127 semitrailers. These semitrailers are 27 feet long and have a TOE rated capacity of 12 short tons per load over improved roads on line haul. The rated capability of this company of 177 personnel, three operating platoons totaling 60 tractors and 120 semitrailers, is 1,080 short tons per 24-hour, around-the-clock line haul operation. This is a break bulk cargo capability since the M127 semitrailer is not designed to carry containers. This means that 10 truck companies or a total of 600 tractors, 1,200 trailers, and 1,770 personnel

LTC Goyne is presently assigned as Chief of the Organization and Literature Division, US Army Combat Developments Command Transportation Agency, Ft. Eustis, Va.



are required to move 10,800 short tons of cargo.

When the impact of containerization in the commercial transportation industry began to affect military transportation operations and the military recognized the savings which could be realized by maximum use of containers, two steps were taken to give transportation truck units a limited capability to move containers. First, a small purchase of 20-foot containers (MILVAN's) and container chassis was made by the Army. Secondly, studies were undertaken to examine the feasibility of modifying the M127 semitrailer to give it a container carrying capability.

These steps were not intended to give the Army a substantial container transport capability. It was felt, and rightfully so, that commercial carriers could satisfy the military requirement for container transport in most in-

stances in peacetime and to some extent in combat situations. The MILVAN equipment was to be used to augment commercial capability or, in those few cases where it was not feasible, to use commercial transportation.

However, the MILVAN chassis does not have a break bulk cargo carrying capability. In addition, the MILVAN chassis is not fully compatible with the 5-ton tractor authorized in the medium truck company. Modification of the M127 semitrailer would increase flexibility by giving it both a container transport capability and a break bulk cargo capability. It is also compatible with the military tractor. It would not, however, increase its payload and therefore would not take advantage of the savings inherent in containerization.

At the peak of the Vietnam buildup the M127 semitrailer was the workhorse of the transpor-



A US Army MILVAN (8 x 8 x 20 foot container) being discharged from a container ship onto an M127 semi-trailer aboard a LARC-60.



The same MILVAN after it has been loaded onto the semi-trailer.

tation system in Vietnam. Despite the work performed by these transportation line haul units, a backlog of cargo existed. Ports and depots were congested even though tractors and trailers were used to capacity. In an effort to reduce the backlog and congestion, many expedients, to include tandem trailer operations and a larger commercial trailer, were used. The line haul highways were capable of accepting larger rigs, and, despite the congestion in ports and depots, the larger rigs could be maneuvered in these areas. At the same time, a greater production per tractor per mission was realized.

In any situation where military cargo is shipped overseas in containers, the majority of the containers used will be commercial. Of all the containers in the system today, over 50 percent are more than 20 feet long. During calendar year 1971, 92 percent of all new containers manufactured were more than 20 feet long. Therefore, for the Army to restrict itself to the 20-foot MILVAN chassis would place the requirement for the majority of containers in an oversea area to be moved by commercial carriers in both combat and noncombat situations. While this might appear to be ideal, the Army is responsible for the movement of cargo in a theater of operations and must have the capability of moving all standard size containers in a contingency situation, either combat or political, where it is not feasible to use commercial carriers or where commercial carrier equipment is not or cannot be made available. This means the Army must have the capability to move containers up to 40 feet in length on its own equipment.

In addition, every effort must be made to realize the manpower and dollar savings inherent in containerization by taking advantage of equipment and methods of operation already developed by the commercial transportation industry. In use today by commercial carriers are tractors and container chassis capable of hauling any size container from 20 to 40 feet in length including the 24, 27, and 35 feet sizes. This equipment is in use now and like equipment could be purchased by the military without excessive research and development costs. Most importantly there are at least two manufacturers who are producing a 40-foot flat bed/container chassis. These chassis are basically flat bed semitrailer chassis with a container transport capability.

Let's look at the potential of this chassis along with a possible reorganization of the medium truck company and compare the reorganization with the now existing medium truck company. First, the existing truck company has three operating platoons of 20 tractors each. The Combat Developments Command Transportation Agency has already studied the feasibility of increasing this to a four-platoon company. Thus, for every four companies now required in a given force structure only three companies would be required with a resultant decrease of one company overhead. Now, let's take this four-platoon company and give it 40-foot flat bed/container transporters rather than the current M127 semitrailers. This company would then require approximately 230 personnel. However, its TOE rated capability for a 24-hour, around-the-clock line haul operation would be 3,000 short tons. This is based on a 25 short ton payload per semitrailer and with 75 percent of the 80 tractors (60 tractors) available from a maintenance viewpoint. This also includes a two for one semitrailer to tractor authorization so that two round trips can be made in a 24-hour period, as is now the basis for the present TOE capability.

Now we see the possibility of our tonnage capability being almost tripled so that only 3.6 truck companies or 828 personnel would be required to move the tonnage now requiring 10 truck companies or 1,770 personnel. Only 288 tractors and 576 semitrailers would be required as compared to 600 tractors and 1,200 semitrailers. Our production per man would increase from approximately 6 tons per man per day to 13 tons per man per day, while our tractor production increases from 18 tons per assigned tractor per day to almost 38 tons per tractor per day.

In addition to these savings our force planners wouldn't have to worry about a mix of container transporters and break bulk cargo semitrailers for any given operation because the 40-foot semitrailer/cargo transporter has a dual capability. It can carry any container from the 6 $\frac{2}{3}$ -foot module of the TRICON to a 40-foot container or any combination of container and break bulk cargo within its size and weight rated capability.

There is, however, still a place for the M127 semitrailer modified to carry containers. This





A commercial "side-loader" placing a MILVAN container onto a MILVAN chassis.

is in forward areas where the TRICON and 20-foot containers will be prevalent and where an offroad capability may be required. It would, of course, be moved by the 5-ton tractor now in the Army inventory. The units authorized this equipment, however, would normally not be line haul units but would be divisional or division and brigade support units.

Today, and for some time to come, containers are and will be the driving force in transporta-

tion. The Army has a unique opportunity to modernize its line haul fleet by taking advantage of commercial transportation developments with little or no cost in research and development. It also has the opportunity to substantially reduce manpower requirements without mission degradation. This is the course that the US Army Combat Developments Command Transportation Agency is following.





# BRIDGING THE . . . GAP WITH THE MGB

by Major W. F. Allison, Jr.

"Lay hold!" and "Heave!" are terms that have echoed around the world for years since the inception of the Panel Bridge, Bailey Type. It is as much a part of the Corps of Engineers as "Essayons" is itself. The state-of-the-art has overtaken the Bailey in the form of the new lightweight Medium Girder Bridge (MGB). It initially was conceived by the United Kingdom and is in the final stages of engineering development testing by US Army Materiel Command.

As representative of the Army-in-the-field, the US Army Combat Developments Command Engineer Agency has established a requirement for a lightweight, hand-erectable, 100-foot, Class 60, fixed bridge. The MGB, by its use of specially developed light metal alloys and novel method of assembly, outdates previous ideas of the time and effort required for fixed bridge construction for fixed, semi-permanent bridging.

The basic unit is a six-foot long, light aluminum alloy, box section, top panel. For longer spans and heavier loads, the box sections are deepened by the addition of triangular bottom panels. The sections can be rapidly joined together to form long girders. Two of the long girders spaced with an aluminum alloy decking form the basic bridge and provide a 13' 2" roadway width.

Ramp sections, similar to the basic bridge configuration, are added and the ramp angle is 22%. The bridge is launched in a similar manner to the Panel Bridge, Bailey Type—erecting the bridge on rollers and launching over a gap with the use of a launching nose. In situations where near-shore and far-shore elevations are

the same the bridge can be launched by hand.

Site Preparation? A minimal site preparation is required. The MGB can be erected and launched on site conditions with lateral and/or long longitudinal slopes up to 10%. This factor, allowing operation in a wide variety of site conditions, contributes to the short erection time.

Transportability? All components and equipment required to erect a CL 60, 100-foot bridge are carried on pallets and weigh 27 tons, one-third the weight of the Bailey Bridge. Pallet configuration weights vary from 3–4.5 tons and are transported on 5-ton Dump Trucks and 4-Ton bolster trailers.

Upon arrival at the bridge site the rugged pallets are off-loaded by either dumping off the dump trucks or dragging from the trailers. In current engineer organization envisioned by the USACDC Engineer Agency, the bridge will require seven, 5-ton dump trucks and six, 4-ton trailers. The palletized bridge is also transportable by rotary and fixed wing aircraft.

The capability of MGB is not limited to a 100 foot span. Means to extend the MGB are being evaluated. A cable reinforcing kit can be added below the triangular bottom panels and are post-tensioned providing spans up to 200 feet. A pier kit has been developed by the United Kingdom which will allow the basic bridge to be extended two or more 100-foot spans.

Reduced erection time is the most significant attribute over the "classic" Bailey Bridge. One engineer panel bridge platoon can completely construct the MGB in 2–2½ hours during the hours of daylight and 3 hours during the hours

Major Allison is currently assigned to the US Army Combat Developments Command Engineer Agency, Ft. Belvoir, Va.



Erection of MGB (sections)



Placement of the aluminum alloy decking



Launching of the MGB



Pallet-off-loading




Mission Complete. An M-60 tank crossing the completed MGB

of darkness. Time savings is realized by minimal site preparation and lighter weight components. Where a transom member of the Bailey Bridge weighs 618 lbs, the heaviest component of the MGB weighs 370 lbs.

The MGB offers to the commander a rapidly emplaced bridge to span seemingly impossible gaps. The MGB is scheduled for introduction into the Army inventory during FY 74.

The means of extending the span in excess

of 100 feet rapidly through the use of cable reinforcement or piers enables a significant flexibility not available with current tactical bridging. The inclusion of the MGB into the Army inventory will provide a rugged tactical bridge that is quick and easy to erect, lightweight, few parts, requires few vehicles for transportation, can be erected by a platoon, a distinct improvement over present bridging, and "bridges the . . . -GAP." 



# WHAT WOULD HAPPEN IF...



by 2LT Gregory A. Goolkasian

## Editor's Note:

The concept presented here is strictly the author's own. However, on page 24 is the story of how CDC uses computers in planning the Army of the future.

With the advantage of hindsight, it is often easy to point out the mistakes made by great military commanders in history. What these commanders needed was a "what would happen if" machine. The commander would then have advance information based on his plan of action.

In an obscure section of the dungeon of a Persian king, a large black box was making peculiar noises. "Sire, according to the black box, this is the best time to attack the Greeks." "Very good, Orsa\*, notify my generals. We will leave in the morning and do not forget to bring the extension for the black box." "Yes, Sire."

Based on the advice from the black box, the Persian king decided the time was right to in-

vade Greece. The Persians have now marched within sight of the Pass of Thermopylae. "Orsa, what would happen if I sent my troops through the pass?" Orsa pulled out the little black box and fed the king's plan of action into it. "Sire, the little black box has said that there is a high probability that the Spartans will defend the pass in order to give the main Greek force time to organize. Based on the terrain and the past performance of the Spartans, it would be a mistake to go through the pass." "Very good, Orsa, I will have my generals find another route through the mountains."

What specifically did this black box do? Let's assume that the black box in the king's dungeon

\*Orsa is the name of the king's Oracle.



was a computer. Information pertaining to the Greek culture, past behavior, economy and social conditions had already been fed into the computer. The king wanted to know the best time to attack. He could call together his advisors and ask them the question, but it might have taken them days to correlate all the information on the Greeks. Instead, the Oracle had the computer correlate the information and come up with a time for attack.

When it was time to attack, the king wanted to know if his plan of attack would work. What he needed was a computer model which would correlate the Greeks behavior with terrain and simulate his attack. Orsa had brought along his time sharing terminal (Black Box) which was linked (By Phone) to the main computer in the castle dungeon. The upcoming battle was simulated and the results revealed it unwise to attack through the pass.

Models (a reduced representation of reality) have been used in the solution and simulation of problems since time began. With the advent of the computer, models acquired a certain mystique and sophistication that field commanders view with skepticism. There were physical problems that prevented the field commanders from using computer models: Getting the computer to the battlefield, personnel to run the computer, sophistication involved in coding the input.

Commanders have not disregarded the value of models. In fact, most battalion and company commanders depend heavily on models (although they know them as: Maps, FTX's, rehearsals, blackboards, etc). Commanders, however, have discounted the computer applications of models because of the reasons mentioned above. The problem is how to computerize the commanders' current models and give them the capability to use the computerized models.

Time sharing can be the computer in the field. The commander would have a computer terminal which would be the size of a portable typewriter (already developed). The terminal is similar to an electric typewriter. By attaching a phone coupler (a device to fit a phone head set in), the commander has computer capabilities.

The physical computer would be at division or field army level. To tie into the computer, call the computer on a phone line and set the phone onto the phone coupler on the terminal.

At this point the skeptic might say, "So what, the field commander has a computer at his finger tips; but it is still too complex to use, plus what would he use it for?"

There are two major uses. One is to provide a Management Information System (MIS). This means, for example, that when the S-2 plots information on his situation map it will now be stored on the computer. The information becomes accessible to all levels of command. Any information posted by higher commands will automatically update information on all levels of command. Intelligence data will become almost real time. The S-1, S-3, and S-4 can use the MIS to facilitate record keeping and updating the commander.

The second major use of the field computer is in simulating of a tactical situation using a specific plan of action. Example: Before a commander issues his field order, he would type in his plan (no coding necessary) into the computer on his terminal, (prior to this, the S-3 and S-2 have up-dated their situation map on the computer). The computer model would then simulate the upcoming battle using the commander's field order. The printout would be almost instantaneous and would give a summary of the battle. The commander could look at the simulation and determine if his field order should be revised to cover a possible enemy course of action not considered before. The commander has had his field order simulated. He can then accept or reject the results of the simulation.

The information which is put into the terminal does not have to be coded or transformed into a program language. It does not require an expert. The experts and programs will be with the physical computer at field army.

The computer can correlate and evaluate factors faster than conventional means. There is no mystique about computerized models and time sharing. These should be used by field commanders to take advantage of the better information that can be provided.

Orsa provided additional information which allowed the Persian king to make his decision. The king was able to ask, "What would happen if . . ." and Orsa provided a probabilistic reply. With the employment of time sharing and computer models, each field commander will have his own Oracle.



# TURNING NIGHT INTO DAY

by William A. Fielder, Jr.



Dragon Thermal Night Sight Mounted On The Dragon Launch Tube. Intense research in thermal energy techniques has produced a sophisticated item of Dragon ancillary equipment—the Thermal Night Sight.

The United States and its allies in the North Atlantic Treaty Organization are faced with a continuing threat to peace in Western Europe. Warsaw Pact forces in East Germany appear well maintained; and modernization of equipment, training, and combat tactics and techniques continues. The backbone of this threat is its large concentration of mechanized armored vehicles, which, according to Iron Curtain doctrine, will be employed in fast-moving, hard-hitting, around-the-clock attacks. As a result, US and NATO Forces must be adequately equipped to counter a 24-hour armored threat.

To meet this armor threat and to maintain a well balanced, peace-keeping force in Europe, the United States Army must continue to improve its combat capabilities, particularly in the area of antitank weaponry. One of the latest improvements in infantry antitank firepower is the heavy antitank/assault weapon system called TOW which was issued to USAR-

EUR's mechanized infantry battalions in October 1970, and has been successfully used in Vietnam. The TOW (tube-launched, optically-tracked, wire-guided) missile system is a revolutionary infantry antitank weapon which is normally fired from specially adapted vehicles, but can be dismounted for relatively short-distance, foot-mobile operations. The TOW has a very high hit probability against long range stationary and moving targets, and represents the highest achievement to date in the state-of-the-art of wire-guided missile systems.

To further improve its antitank capability, USAREUR will next be equipped with the man-portable Dragon, a medium-range antitank/assault weapon which operates similarly to TOW and provides a high first-round kill probability against tanks and bunkers at intermediate ranges. Dragon will complete the family of infantry weapons, filling the gap between the short-range M72 LAW and the TOW.

Mr. Fielder, DAC, was formerly assigned to the US Army Combat Developments Command Infantry Agency, Ft. Benning, Ga.



Both the TOW and the Dragon antitank weapon systems have been under development for a number of years. The realization now of a family of antitank weapons, with the inherent capabilities of these weapons systems, is indicative of the close cooperation and interface of the combat developer (USACDC) and materiel developer (USAMC). The result of these joint efforts has been to provide Infantry with a combat effectiveness against armor never before achieved.

Concurrent with the development of the TOW and Dragon weapon systems, development of a night sight for use on these systems was pursued with promise of success due to advancements in the state-of-the-art of infrared and electro-optical technology in the last decade. Intense research in thermal energy techniques has produced a sophisticated item of TOW/Dragon ancillary equipment—the Thermal Night Sight. This sight will provide an instantly responsive, highly effective antitank capability under all conditions of reduced visibility. Thermal imagers have an inherent penetration capability—through fog, haze, dust, smoke and camouflage—and are not affected by daylight, which will be a tremendous advantage in day or night combat operations.

Development of thermal antitank night sights began in 1964 when the requirement for TOW and Dragon antitank weapons was generated by the Combat Developments Command and approved by the Department of Army. CDC stipulated that a night-fighting capability must be provided with each weapon, and a formal development program for a night sight was initiated by the Army Materiel Command in 1965. It was realized during the conceptual stages of the basic weapon system that standard battlefield illumination equipment such as mortar flares and searchlights would not provide enough illumination to fire TOW and Dragon effectively at night. Unlike fire-and-forget weapons, gunners firing wire-guided missiles must track the target until the missile impacts, whereas with the 90mm and 106mm recoilless rifles, until recently the mainstays of US infantry family of antitank weapons, conventional illumination methods were satisfactory. This does not mean that TOW and Dragon cannot be employed under battlefield illumination, but low-contrast targets, optical reflections, and moving shadows caused by drifting parachute flares severely restrict gunner

accuracy at night. Equipping each antitank squad with a night sight for TOW and Dragon will allow the squad to achieve a full night tank-killing capability and to engage targets of opportunity without the delays associated with reliance upon artificial illumination. The night sight will also give the weapons squad a covert capability for perimeter surveillance during lulls in the situation or when the threat of night infiltration is present.

The TOW and Dragon night sight development programs were conducted under the auspices of the respective project managers and the Electronics Command's Night Vision Laboratories. The objective was to produce a night sight that could "see" as far as the weapon could shoot, and not impose a significant weight burden. A special development was necessary because conventional passive image-intensification equipment could not be easily adapted to the TOW or Dragon weapon. Exposing a light-amplifying image intensifier to the flame of the missile beacon and flight motors causes the sight to saturate or "white out" and obliterate the target. A method had to be devised to circumvent this problem, or another technology, such as thermal imagery, had to be applied to the special TOW and Dragon problem. Guidance on the tactical application of antitank night sights was provided during the development program by the Combat Development Command's Infantry Agency, working in conjunction with the US Army Infantry School at Fort Benning, Georgia.

Analysis of the TOW Night Sight problem involved consideration of a variety of technical approaches and resulted in selection of three basic concepts: A hybrid thermal imager/image intensifier; a pure thermal imager; and a gated image intensifier using a high-intensity light source. The hybrid and the thermal imager were eliminated in feasibility tests in 1966 and 1968 respectively. Neither concept was compatible with the TOW system. Heat produced by the missile launch and flight motors saturated the thermal detectors and the gunner lost his sight picture. The TOW Night Sight Evaluation Committee which had been established by the Missile Command for this evaluation, recommended that the TOW Gated Night Sight, or TGNS, be selected for further development and deployment with the TOW weapon. This recommendation was subsequently concurred in by





Dragon Thermal Night Sight. The Dragon sight was adopted as an interim sight for the TOW.


CDC and approved by the Department of Army.

In its current configuration, the TGNS is too heavy at 58 pounds for man transportability. Also, this weight causes severe mechanical stress on the TOW launcher. The TGNS has a maximum target engagement range of close to one-half of TOW's maximum range. The average surveillance range is less under low ambient light conditions and greater under full moonlight. Although the physical and performance characteristics of the gated sight are not ideal from a tactical standpoint, the sight is representative of the best that technology could offer in the pre-1970 time frame. In fact, the sight meets the specifications set by the Army in the revised requirements document. However, thermal imager techniques have been refined to the point where outstanding target detection capabilities can be realized with small, compact, less expensive and lightweight thermal systems. These characteristics are attractive from a tactical and from an economical standpoint. Consequently, the Army began last year to take a second look at the cost and limitations of the TGNS, and to consider replacement with a thermal imager.

The possibility of obtaining a very lightweight sight with comparable range capabilities was attractive to the infantry because of tactical prob-

lems anticipated with the weight and range capabilities of the TOW sight. The compatibility of the Dragon candidates with the TOW system was tested in manned and unmanned missile firings at Redstone Arsenal, with the tests verifying that both candidates were compatible to some extent with the TOW system. Hit probabilities obtained with both sights were near equal. These tests were monitored by the Combat Developments Command which also evaluated the test results to determine which sight would offer the greatest tactical advantage to the user. The thermal imager was found to be more desirable because of its status of development, its capability to operate more effectively in inclement weather and poor light conditions, and its superior target detection capabilities.

After evaluating the flight test results, CDC favored selection of the Dragon thermal night sight as a replacement for the TOW Gated Night Sight. Subsequent events have led to a move to adopt the Dragon sight as an interim sight for the TOW, and to initiate development of an improved thermal imager capable of exploiting nearly the full range of the TOW system. This is an ongoing action designed to produce a night sight that will greatly improve the night effectiveness of the TOW system.

The process of development, evaluation and trade-off determinations that have taken place during the evolution of the TOW and Dragon night sights are examples of the interplay and spirit of cooperation that takes place between the Army commands and the Department of Army in the overall effort to produce an item of equipment for the Army that will provide a maximum combat capability within the limits of current technology. The result in this instance will be a quantum jump in the antiarmor combat effectiveness of Infantry units engaged in night combat. Problems of exposure and loss of security on the battlefield when operating under conventional artificial illumination will no longer be encountered by the combat Infantryman during antiarmor operations. Development of similar night vision equipment for all tactical applications is a continuing activity in today's technology. The possibility exists that all future US night operations will be conducted under a completely covert atmosphere. This would, of course, enhance the element of surprise, minimize casualties and contribute to the success of Infantry forces on the future battlefield. 



Captain Burke doing his thing.

## TABLETOP STRATEGY

by Maggie King

Does mapboard wargaming accurately recreate the battlefield decision-making process? "Not by a long shot," says Army Captain Charles F. Burke of the Combat Developments Experimentation Command which is headquartered at Fort Ord.

"Unit counters and random combat results tables can recreate the mechanics of battle, but they simply do not embody the intangibles such as leadership, morale, and personalities of troops and their commanders."

Captain Burke should know. An Infantry officer and combat veteran, he will soon complete eight years of Army service; but he has been wargaming since he was sixteen.

"I got started early," he said. "I've always been a competitive person and interested in military history. I would read about battles such as Waterloo, Chancellorsville, Stalingrad and the Battle of the Bulge and I would wonder if I could have done any better had I been in command and under the same historical circumstances."

After hundreds of games played face to face against other players, and scores played out through the mails, Burke concedes that it takes a very inept opponent usually to prove history wrong.

"I've learned a great deal about what wins battles. It boils down to fundamentals such as good judgment, common sense and wise management of resources. Such fundamentals have historically spelled the difference between defeat and victory. That's been an invaluable lesson to me."

Typical of Captain Burke's belief in historical precedent, he once bought a book to read on a plane during his first trip to the Republic of Vietnam in August, 1967. The title of the book was "Great American Indian Wars."

"Man for man, the American Indian was perhaps the toughest guerrilla fighter the world has ever known—yet he was beaten," said Captain Burke. "He was beaten because he ultimately tried to fight his wars the way the white man did. He was tempted by technology . . . repeating rifles, gunpowder and cavalry tactics . . . and simply couldn't put it all together fast enough. In the end he lost because he mistrusted his old, more reliable ways. He lost sight of the fundamentals. You see the same things happening today. History *does* repeat itself."

In pursuit of his wargaming hobby which

Maggie King is currently a writer for the CDEC information office, Ft. Ord, Calif.



spans more than a decade, Burke has met many interesting people with unusual backgrounds.

"One of the most interesting opponents I have ever encountered," he said, "Was a Belgian business man. We re-fought the German World War II Ardennes Offensive (commonly known as "The Battle of the Bulge") to a virtual standstill. I was constantly amazed at his adroit manipulation of the German Forces. I later learned that the man had been an interpreter and interrogator for General Anthony C. McAuliffe at Bastogne during the actual campaign! He was simply reliving an old firsthand experience."

But not all of Burke's opponents are World War II veterans.

"There are a lot of young people interested in wargaming these days," he said. "I regularly get trounced by a local senior high school student. The guy's a genius. He has a mind for mathematics. If I have some sort of new strategy to try out, he's the guy I try it out on. It's like playing opposite a computer."

According to Burke, tabletop wargaming as a hobby is flourishing. Entire companies, he pointed out, have been established to do research, player testing and publishing of historical simulation games for military history buffs like himself.

"My personal gaming collection consists of more than thirty games," he said, "and they range from the early campaigns of Alexander the Great to contemporary situations of the Vietnam War."

A member of two professional (national and international) wargaming clubs, Captain Burke is a regular attendee at Tuesday night get-togethers of the Monterey Peninsula Wargaming Club, a group of military and civilian Soldiers, sailors, airmen and students. The group meets in Presidio of Monterey Service Club to exchange ideas and formulate modifications to existing and proposed games. Sometimes the meeting resembles a classic automobile show as members carefully display fragile heirlooms of wargaming hobbycraft.

"Some of the games I bought in my early wargaming days are no longer in print. They've

become real collector's items. I have been offered as much as forty dollars for one of them. I bought it in 1960 for \$4.98."

But the Captain's wargaming interests are not mercenary.

"I find tabletop wargaming an enjoyable and relaxing pastime . . . a good way to brush up on some of those fundamentals I was taking about earlier. Then, too, it's a good way to meet people with common interests, to exchange ideas and to speculate, for example, about what a troop of armed helicopters would have done for Napoleon at Waterloo."

More recently, since Burke's assignment to the Army Combat Developments Experimentation Command (CDEC) at Fort Ord, wargaming has been an extension of his work.

"Many people refer to CDEC as the Army's 'Live Chessboard' because of the unit's mission which is to experiment and evaluate the combat tactics, techniques and organizations which may be required by the Army for survival and victory on some battlefield of the future. With my background in wargaming, I feel very much at home here."

Many of the games Captain Burke acquired on his own have actually been used as prototypes preceding large-scale battlefield simulations conducted at Hunter Liggett Military Reservation which is 85 miles south of Fort Ord. There, field testing of abstract theories is accomplished, results compiled and decisions made.

"I'm part of a very large and very important continuous wargame here," says Captain Burke. "We go far beyond the mechanical limitations of a mapboard and grease pencil, combining time-tested fundamentals with challenging new variables. Our getting answers to the unknown today may save many American lives tomorrow."

It is a rare thing, supposedly, for a man to be able to do something he would normally consider a hobby and get paid for it. But for Army Captain Charles F. Burke, assigned to CDEC's Headquarters Company, wargaming is now a serious but enjoyable confrontation with tomorrow's potential battlefields.





# JIFFY GAMES—FANTASY OR FUNCTIONAL?



by LTC Richard B. Noonan

Among the enigmas of today's Army is the Jiffy Game. Is it adult entertainment developed by Mattell, Inc.? Or, is it possibly some sort of game played quickly or which ends quickly? The latter suspicion is more nearly accurate.

At Fort Leavenworth, the Combat Systems Group has been actively engaged in Jiffy Games for several months. Although many CDC personnel have either participated in or contributed to Jiffy Games, there are still many in the Combat Developments community who are uninformed or misinformed of the exact nature of Jiffy Games.

At first blush the Jiffy Game appears to be a war game. Not so! On the contrary, it is a sophisticated map exercise for which there is no computerized assistance. The only mechanical support is the occasional use of a slide rule and a calculator. Simplicity is the principle of Jiffy gaming and the entire concept was designed to create a procedure that could be used to examine different force designs. The anticipated result was to establish a rough estimate of a force design's value, and thus identify force design models which would be candidates for compre-

hensive follow-on evaluation in either computerized war games or troop tests.

Essential to the conduct of the Jiffy Game is the preparation phase which consists of the following six integral steps:

- Srenario.

- Maps and terrain study.

- Threat data.

- Unit firepower calculations.

- Parameter selection.

- Assessment factor selection (field manuals CDC/DA studies).

Jiffy Game personnel array various force models on a map, and then maneuver these forces against an approved threat. An analysis is then made of the capabilities or limitations of the force model while conducting various operations—attack, defense, delay and counter-attack, for example. Factors used in the analyses are weapons systems capabilities, probability of kill (PK) factors, time and distance, and others, which are arithmetically quantifiable. Evolving from this process are insights which lead to force model design variations and a better likelihood of optimizing unit capabilities.

LTC Noonan is currently assigned to the Studies and Threats Directorate, Ft. Leavenworth, Kan.

Having established a likely candidate, follow-on testing can be accomplished on a more comprehensive basis with some assurance that the enormous expense of model changing can be avoided. These are the salient features of the Jiffy Game:

Map Exercise.

No computers.

Simple procedure to investigate different force or division designs.

Provides rough estimate of effectiveness of a force or a division.

Provides insights.

There are, of course, inherent limitations to Jiffy gaming. For example, weather, terrain, command and control, and communications and electronics are all factors which cannot be quantified. As such, insights from gaming do not address any of these essential matters. These more appropriately—and of necessity—are examined in computer assisted war games and actual field testing.

The value of Jiffy gaming depends largely on the validity of comparison. To calculate or estimate a force design's potential a comparison must be made between two or more organizational concepts against identical threats. Equally important is the need to establish baseline data

against which variable data can be compared. In the case of Jiffy Games the constant factor is threat and the baseline data evolves from an existing organization. For example, an H-series airmobile division is deployed against a threat and the results establish the baseline data. The next step is to maneuver a different or series of different airmobile division organizational concepts against the identical threat. The results of these games can then be compared against the baseline data. The derived insights give a good indication of weapons mix effectiveness, mobility capability, and whether a proper balance exists between combat, combat support, and combat service support elements.

Inasmuch as the Jiffy games are entirely manual, a substantial number of personnel are needed to form gaming teams. At present COMS Gp employs eight officers supported by two USACGSC advisors on an "as needed" basis. This is the team composition:

Chief Comptroller

Blue Commander

Red Commander

Operations Calculations (2)

Logistic Calculations (2)

Support Design

CGSC Advisors (2)



Lt. Bob Patrick (left), and LTC James Gleason (right) of CONFORS Group, survey one of the many maps used for wargaming.





Lt. Patrick and LTC Gleason discuss strategy using one of the larger wargaming maps.

Some reductions in team composition may be possible when and if the EINFALL Model becomes operational. This is a computer model which is currently under development as a Jiffy Game tool and will be discussed in more detail later.

The heart of a Jiffy Game is the critical incident. While there are factors which are quantifiable, some arena or phase must be identified within which a comparative analysis can be made. The critical incident serves that purpose and is defined as:

A major action in the play of the exercise that will permit evaluation of selected parameters during the specified period of time. The critical incident also leads to subsequent critical incidents. The time frame can vary between and during critical incidents so that interests can be focused on specific situations.

In this way gamers can carefully examine the performance characteristics of alternate force designs within a given situation, i.e., attack across the FEBA, as well as against identical threats.

Combat Systems Group has already accomplished, and is currently gaming or projects gaming activity as part of a variety of study requirements. A recently completed effort was the Reappraisal of the Airmobile Division (RAD) study which was approved by CDC and forwarded to the Army staff for action. Force level Jiffy games have also been conducted to assist OSD in the NATO Land Force Requirements Review. An ongoing Jiffy Game is TRICO which is the Evaluation of TRICAP Concepts and Organization. The Concept for a Family of Army Divisions (CONFAD) study is still in its first phase during which alternative light and

heavy division organizations will be developed. Following selection of one or more light and heavy candidate designs, each will undergo the Jiffy Game process. The baseline units will probably be the H-series armor and infantry divisions.

EINFALL was previously mentioned as a potential assist in reducing manpower requirements and speeding up the Jiffy Game process. The model is a two-sided battle simulation and was originally developed by the Federal Republic of Germany's Ministry of Defense. The purpose of the model is to answer questions concerning force composition, force balance, and weapons and tactics without the large expenditures of time and manpower necessary in map type war games. EINFALL has been modified to meet the requirements of the British at the UK Royale Armament Research and Development Establishment.

At COMS Gp the model has been converted to work on the CDC 3300 computer, and a test game is currently underway. The test will provide an opportunity to gain experience and complete the debugging process. EINFALL, when placed in operation, will support the Jiffy Games by allowing a relatively fast turnaround for each game, and allow the military analysts to experiment a bit before making some of the judgments they must eventually make. Finally, the model will assure consistent analysis as personnel are changed or as they begin to form strong opinions.

In summary, the Jiffy Game provides an inexpensive management tool for examining various forces, provides a comparison of the effectiveness of various forces, and was never intended—EINFALL notwithstanding—to supplant the more sophisticated and comprehensive computerized war game.



# THE CHANGING ROLE OF



# CDC's INSPECTOR GENERAL

by Colonel Edward H. Cope

The role of Inspector General as a hard nosed, crusty old skin flint has come to a close. No longer does the IG inspect just to find and assess the maximum number of administrative gigs. He now strives to be of assistance to every Soldier to report the things that are being done well, and be on the alert to identify potential problem areas before they become candidates for major corrective efforts.

As Commanding General of US Army Combat Development Command, Lt. General John Norton has charged his Inspector General to avoid the old stereotyped compliance type of inspection. Alternatively, he is to look for and report progress—to meet and talk with junior officers and enlisted personnel; to seek their views on job satisfaction and proper utilization in skill areas. He must provide instruction and guidance when there is doubt as to interpretation or implementation of directives, and recommend measures for improved efficiency and economy. These are all steps that lead to greater professionalism in soldiering.

But is this a new role for the Inspector General to play? To answer this question, we need only to review the history of the Army IG.

The founder of the Army's Inspector General system, General Von Steuben, a Prussian, was recruited in France by Benjamin Franklin to join General Washington at Valley Forge in

February 1778. General Von Steuben was tasked to look for ways to improve the Army, its morale and welfare, its training, and its economy of operations.

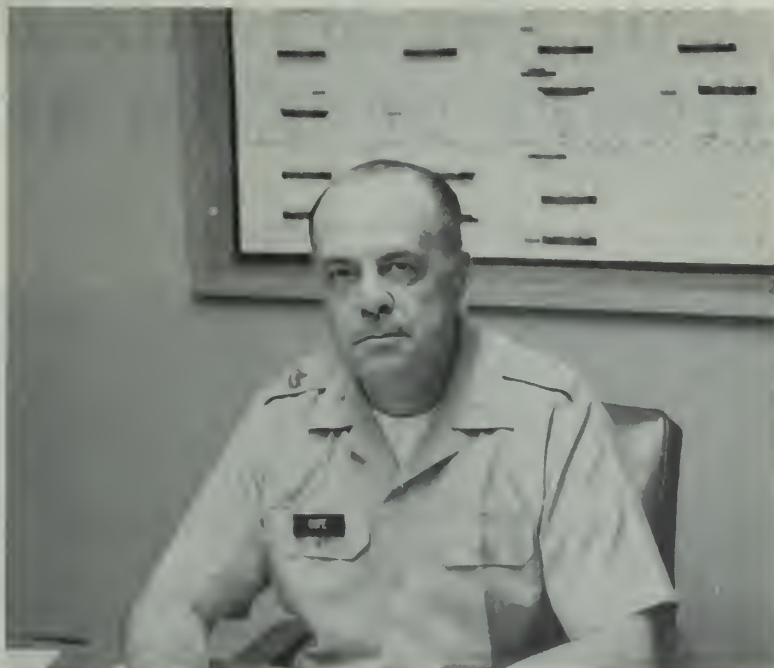
From General Von Steuben's time the role of the Inspector General has evolved into two primary functions: inspections and investigations or inquiries. These functions have not changed.

Whenever possible, inspections are conducted from the bottom to the top of the chain of command of the inspected organization so that problems discovered at the lower level, which are beyond resolution there, may be reported to the higher level for assistance. This is the general design of the inspection plan for the Combat Developments Command during fiscal year 1973. A second consideration is to schedule inspections at least eleven months apart and 'if possible' in the same month as the last inspection. The fiscal year 73 plan deviates from the second consideration somewhat to provide for Agency visits prior to Groups in the general order of CONFOR Gp, CDEC, COMS Gp, SAG, PALS Gp, and INCS Gp.

Prior to making an inspection, the IG will request information from the unit to be inspected in order to better prepare to assist the inspected unit. Upon arrival for the first day of inspection, the IG announces the purpose of the inspection,—to assist, to report things being done well

Colonel Cope is currently assigned as the Inspector General for the US Army Combat Developments Command.





Colonel Edward H. Cope is the current Inspector General for the US Army Combat Developments Command.

or new ideas, and to indicate problem areas. Usually during the afternoon of the first day he will hear complaints or requests for assistance, but of course, he is available to all members of the unit at any time during the inspection. In conversations he will attempt to discover problem areas and take corrective action before problems get to complaint stage. On the last day of the inspection he will discuss his findings with the commander to insure that findings are accurate and that significant achievements or problems areas beyond local resolution are not overlooked. At this time a draft inspection report will be provided which will become the basis for a final report. No findings will be added to the final report that are not in the draft report as it is a cardinal rule that there will be no surprises when the final report is received. All findings are discussed in an open above-board manner as it is a second cardinal rule that an Inspector will not be secretive nor sly in the pursuit of his duties. Finally, the official report of inspection will be prepared and forwarded to the command for a report of corrective action if required.

The second major function of the IG is to handle investigations or inquiries, often referred to as the complaint system. In performing this function the IG is charged with protecting both the rights of the individual and the Army. For

this purpose there are two inspectors general assigned to CDC, one at HQ CDC and one at CDEC at Ft. Ord, California. They are available to provide assistance on almost any subject when the correct procedures are not known or when help can not be obtained within the unit. The chain of command is, however, the primary means for resolution of problems. In addition to the two CDC Inspectors General, IG assistance is available at each post where CDC elements are tenants. Post Inspectors General can be helpful where there are problems with facilities or activities at host installations.

In the performance of his two-fold mission the IG has direct access to the commander as a member of the commander's personal staff. He is one of the communication links between the Commanding General and all members of the command. He must have as his major concern keeping the lines of communication open from the individual Soldier to the top commander. And he must concentrate on people and the things that affect them directly. He must be approachable and understanding to best serve all in the command. He must be your friendly but fair IG in his new role.

Is this a new role for the IG? No, not really, but like every Soldier he is finding new methods of doing things as we become an all professional Army.



# ADP AND THE MANAGEMENT OF COMBAT DEVELOPMENTS

by Julia E. Duffey



Breakthroughs in automatic data processing have given daily decision-making the aid of a high-speed, flexible management information system.

The speed part is important, yes, but supplying the right *type* of information, in a *ready-to-use* style is what makes the system so valuable in CDC.

Let's take a look at why it is necessary for CDC to depend on automatic data processing in daily decision-making.

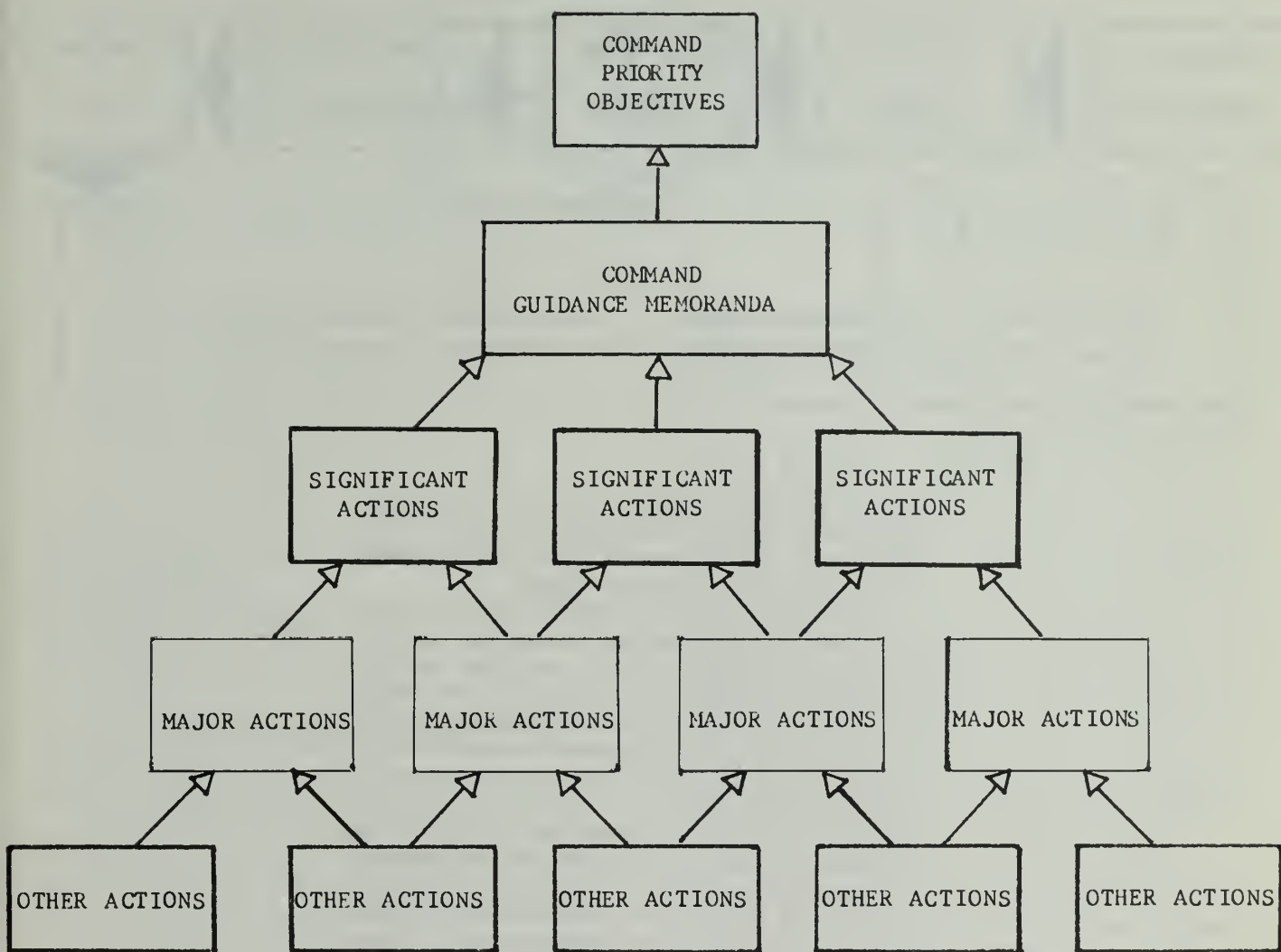
Prior to 1962, responsibilities for improving the Army of today and designing the Army of the future were assigned to various echelons of the military establishment. However, rapid technological advancements in the science of warfare after World War II and during the Korean War resulted in further complicating the already complex process of mixing men, machines, and methods into an effective fighting organization. The

Department of the Army was compelled, in 1962, to reorganize and at the same time centralize that responsibility under the Combat Developments Command. The consolidation of combat development functions resulted in an inheritance by CDC of over 3,000 individual projects. This, however, did not include a method for processing pertinent information into management reports which would show the relationship of these individual actions to major Army tasks.

As defined by its objectives, CDC is the doctrine developer for the Army in the field—recommending new or improved tactics and operations, organizations, and materiel requirements, and providing user-guidance throughout the life cycle of Army systems. Therefore, the developmental process embraces all ingredients that go into making up a well-trained, well-equipped, and well-organized Army in the field. All these ingredients are part of a system, and the design

Julia Duffey is currently assigned to the CDC Management Information Systems Directorate.





must be a total integrated system, rather than piece-by-piece modifications of outdated systems, as prior to 1962.

The formulation of basic concepts determines future objectives. Based on these objectives, combat developments proceed through a continual refining process. Studies lead into determination of equipment distribution or basis-of-issue into organizational changes, and into new or revised doctrines. No one function or phase of combat developments is an end in itself. Each function must be identified with its predecessor and successor functions to adequately coordinate developmental process.

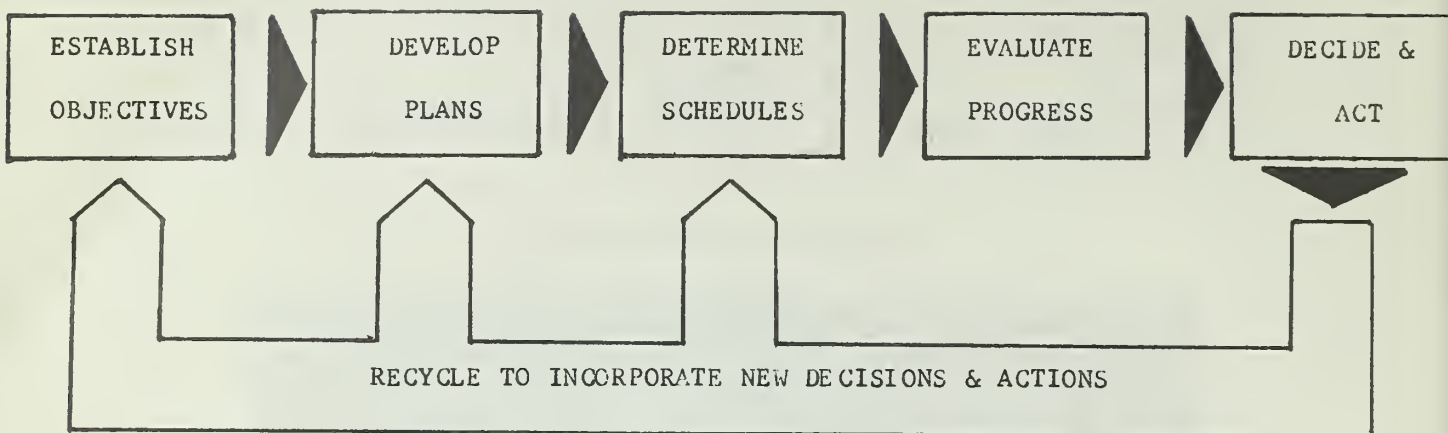
Thus, CDC needed some sequence of goals as well as a means of identifying resources required to carry out those goals. As the first step, CDC outlined its concept of operations and defined the

characteristics of the combat developments process.

"Using the findings, CDC related the individual actions to major projects and further associated groups of actions bearing similar characteristics, and produced a manual system for tracking combat developments actions.

The system provided the means for determining the basic relationships among CDC's 3,000 actions, and established reporting procedures for identifying requirements and resources. However, it was not possible to manually manipulate this mass of information into timely reports needed to direct and control the total Army Combat Developments Program.

Needed, then, was a high-speed, flexible management information system that could provide an array of information reflecting *all* factors



needed in the decision-making process. Automatic data processing equipment provided that means; CDC's Management Information System Directorate provided the guidance.

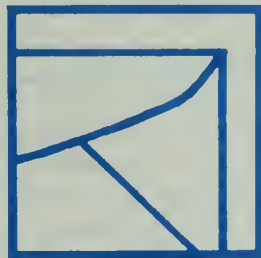
CDC's first automated management information system was designed, developed, and installed on an IBM 360/30 computer at HQ, USACDC in 1966. The development and maintenance of the management information system is based on data furnished by the combat developer throughout CDC. The information is obtained through the use of reporting procedures designed to record the important details of the projects, the resources required for the developmental effort, and a brief description of the project, as well as pertinent historical (milestone) remarks. The ADP-based management information system then can automatically identify all factors affecting the combat developments process. The System:

- Provides all echelons of command with timely reports for determining the state of combat developments by means of its quick-retrieval capability.
- Identifies the CDC organization responsible for the action, and indicates the availability of resources needed to conduct the developmental effort.
- Structures the USACDC Program in terms of the current concept of operations.
- Identifies the Command's Priority Objectives, and relates these objectives to significant and major supporting actions.

The MIS plays a major role in CDC; the ever-increasing use of the system is the hallmark of its success. This, of course, is based on what the ADP'ers call a "loop"—submit good information on time and get, in return, good data on which to base decisions.







## The Forum

Editor  
The Arrowhead  
U.S. Army Combat  
Developments Command  
Ft. Belvoir, Va. 22060

Dear Sir:

I enjoy receiving and reading the Arrowhead, however, I must take exception to June Answer 1b.—“In extreme cold metals become brittle and liable to crack or shatter.”

Aluminum alloys are an exception to your answer. As you will see by the enclosed brochure, aluminum is used extensively in cryogenics where extremely low temperatures are involved. Because of aluminum's increase in tensile, yield, and particularly elongation, it does not become brittle at these low temperatures. Aluminum is one of the few materials where the elongation increases at low temperatures and therefore is most useful in extremely cold temperature applications.

George B. Bailey  
Manager,  
Government Services  
Reynolds Metals Company

Magazine Arrowhead

US Army Combat Development Command  
Ft. Belvoir, Virginia 22060

1. Your magazine “Arrowhead” crosses my desk each month and I appreciate the informative articles, especially on mobility and vehicle advanced weaponry themes.
2. The recent May issue, page 27, “The Point of the Arrow” brought out some interesting “points” on application and use of infrared passive homing missiles. Here at TACOM we are concerned about the survivability of ground vehicles in an infrared threat environment. Passive surveillance systems such as FLIR devices currently pose a detection and direct fire threat to ground vehicles even in a cooled (un-operating) condition. It is also our concern that passive homing missiles may in the future present a critical threat to operating armored vehicles especially in an air to ground attack attitude.
3. Infrared radiometer and imagery signature data derived over a period of several years on armored vehicles indicates that the hot exposed exhaust components when visible to a “seeker” will provide sufficient energy to allow acquisition and tracking. This has been confirmed by actual tethered Redeye and Sidewinder 1-C tracking observations against M48 and M113 targets.
4. In addition, your statement on page 5, May issue, on the exhaust cloud signature on the XR-311 confirms our belief in such undesirable signature effects as exhaust plumes of diesel smoke, condensate fog, dust, high contrast lettering, etc.
5. Such articles and statements indicate that your staff has done considerable research into the technology of future weaponry and you must be complimented.
6. I would appreciate any comments you might have as a result of this letter and would like to submit an article sometime in the future on aspects of vehicle survivability in a “black box” battlefield environment.

DAVID K. WILBURN  
Research Physicist  
U.S. Army Tank Automotive  
Command



## AUGUST QUESTIONS

1. The maximum range of crew served image intensification night sights under moonlight conditions is generally limited to:
  - A. 300 meters
  - B. 800 meters
  - C. 1200 meters
  - D. 3000 meters
2. All but one of the following emplaced sensors (by air or ground) are under development:
  - A. Electromagnetic intrusion detector
  - B. Sector scanning radar with doppler beam sharpening.
  - C. Electromagnetic detection of poorly shielded ignition systems.
  - D. Foliage penetrating pulse doppler radar.
3. The newly invented silicon storage tube provides:
  - A. Increased bit storage capability of core type memory devices.
  - B. A means to store temporarily a visual image.
  - C. A safer method of holding volatile chemicals.
  - D. Increased bit storage capability of drum type memory devices.
4. The Dual Properties Steel Armor (DPSA) associated with the Armored Aerial Scout System (AARS) is intended to satisfy the following function?
  - A. Provide fuselage and rotor protection against 7.62 and 12.7mm ball ammunition.
  - B. Provide aircraft skin structure and protection against 12.7mm ball ammunition in the fuselage area only.
  - C. Provide fuselage skin structure, load carrying structure and protection against 7.62mm ball ammunition.
  - D. Provide for rigid, cashworthy fuselage and main rotor system.
5. "Fly-by-Wire" is?
  - A. A helicopter control linkage which relies on moving control surfaces through wires attached to the pilot's controls.
  - B. A hydro-mechanical system using wire linkage.
  - C. A system through which the pilot's commands are, in essence, transmitted electrically to the control surfaces.
  - D. Currently used as the primary flight control system in all cargo helicopters.

## JULY ANSWERS

1. Which of the following statements best describes the use of pink light?
  - a. It enhances the capability of light amplification sighting devices.
  - b. Its low visibility maintains the viewer's night purple.
  - c. It is invisible.
  - d. It has high potential for safety and signal uses due to its extreme high visibility in poor weather.
2. For Air Defense application the "beam rider" or "correction-to-line-of-sight" guidance system has limitations. Which of the following limitations characterizes a beam rider in an Air Defense role?
  - a. Electronic jamming of the guidance system is easy for airborne targets.
  - b. A system designed to track both target and missile is inordinately complex for Air Defense use.
  - c. The terminal maneuver required against high speed crossing targets is extremely severe on the missile airframe.
3. Holography is useful in which of the following areas?
  - a. Communications, as an aid to rapid secure wire communications.
  - b. Combat surveillance, more specifically, as a means of providing a three dimensional image.
  - c. Aircraft Self Protection, as a method for alerting the pilot to an optical threat.
  - d. Radar, as a method for improving radar acquisition range.
4. SUMMIT (Shelter, Utility, Maintenance, Modular, Integrated, Transportable) will provide a hanger for aircraft maintenance units. Technological advances indicate the cover for this hanger could be made from?
  - a. Paper honeycomb.
  - b. Honeycomb aluminum paneling.
  - c. Lightweight plastic paneling.
  - d. All of the above.
5. Operational ration developments are oriented towards:
  - a. New food processing methods.
  - b. Increased troop acceptability and portability.
  - c. Packaging techniques to obviate mess gear.
  - d. All of the above.





## For God and Country

There is an old legend to the effect that one time the devil decided to have a sale; he would sell the tools of his trade. On the day of the big event, he put them all out for display. There they lay: malice, envy, bigotry, hatred, jealousy. More deadly weapons against the soul of man could hardly be imagined. But to one side lay an innocent looking wedge-shaped tool marked with the highest price. "What's that?" someone asked the devil. "That," he replied, "is discouragement. It is my most useful tool. With that I can pry open a man's conscience and get inside when otherwise I could not get near him. After I get inside, I can use discouragement to bend him any way I choose. It is much worn because I use it on almost everybody." And the legend goes on to say that the price of the tool was so high that the devil still owns it.

There are many factors of discouragement in our world; there are numerous forces which belittle or depress people's lives. Just pick up the latest newspaper and you will see that it covers a whole series of violent and disquieting events. Add to these the personal encounters with adversity which we face as individuals and you

would think that the Psalmist was our contemporary when he wrote: "O my God, my soul is cast down within me." Yet the Psalmist, who shares and recognizes the reality of our situation, also knows wherein the answer to depression lies. When your own private world seems to have hit bottom and discouragement threatens to engulf, join the Psalmist in looking beyond the horizons of immediacy to the Comforter who is only a prayer away:

*The Lord is my shepherd; I shall not want.  
He maketh me to lie down in green pastures  
he leadeth me beside the still waters.  
He restoreth my soul: he leadeth me in the  
paths of righteousness for his name's sake.  
Yea, though I walk through the valley of  
the shadow of death, I will fear no evil: for  
thou art with me; thy rod and thy staff they  
comfort me. Thou preparest a table before  
me in the presence of mine enemies: thou  
anointest my head with oil; my cup runneth  
over. Surely goodness and mercy shall follow  
me all the days of my life: and I will  
dwell in the house of the Lord for ever.*

(Psalm 23)

### Mis-Information Materials

Ft. Belvoir, Va. . . . Admin sections throughout CDC are alerted to screen their stockpiles of information materials (brochures, fact-sheets, charts, biographies, etc.) for accuracy, timeliness and propriety. Some have turned up which refer to organizations and programs that no longer exist.

For example, any remaining stocks of the aged CDC (Welcome) Pamphlet 360-1 should be destroyed. Also "retired" are brochures and

material referring to "Year Armies"—Army-85, Army-90, and the fold-over brochure called "A CDC Program Sampling." The materials now current are in the CDC pocket-size brochure packet, some buff-colored, some yellow with the 10th Anniversary theme.

Samples of all material produced by the Information Office are distributed throughout the command. They should not be filed but should be prominently displayed to show sections and project officers the

current and accurate items available for hand-outs at meeting and briefings. They can also be used as mailouts when answering general queries about CDC.

All elements of the command are discouraged from hoarding or stockpiling large amounts of printed material that may be inadvertently used after it's gone out of date.

## New Breed NCO



Ft. Rucker, Ala. . . . Since the Combat Developments Command originated in 1962, its project officers have habitually been commissioned officers or senior civil servants. To keep pace with the Army's new look and the Chief of Staff's policy of giving senior non-commissioned officers more authority and challenge, the Aviation Agency at Fort Rucker, Alabama, commanded by Colonel John C. Hughes, has the first project officer in the grade of Master Sergeant in its history.

M/Sgt (E-8) William B. Williams (above), a veteran of 19-½ years service, hangs his hat in the Aircraft Systems Branch, Systems Division. Sergeant Williams brings 19 years of aviation maintenance experience with him. His first-hand knowledge of operational maintenance procedures and how CDC can best help the Soldier in the field make him a valuable asset to his new unit. He is responsible for reviewing and commenting on all configuration control actions and product improvements for the OH-6, OH-58, and UH-1 series aircraft. He participates in developing and monitoring test plans for new aircraft systems and keeps close watch on aviation ground support equipment. Sergeant Williams has reviewed and established the Agency

position on maintenance allocation charts. He makes maximum use of available aviation expertise and coordinates his actions with appropriate members of the Aviation Center Team members.

M/Sgt Williams' immediate supervisor says he has certainly been an asset since he arrived in March. His maintenance background, aviation knowledge, and determined effort to do a professional job, have added tremendously to the branch's success.

M/Sgt Williams says the hardest thing he has to do is stand toe-to-toe with field grade officers and high level civilians and diplomatically explain user requirements.

M/Sgt Williams entered the service from North Carolina in 1953, is married, has two children, and resides in Ozark, Alabama. His off-duty interests include fishing, hunting, leathercraft, and wood working.

## WAC Tactics

Ft. Ord, Calif. . . . The US Army Combat Developments Experimentation Command at Fort Ord is in the process of developing a new "tactic" that should be quite an effective aid to their mission—their administrative mission, that is.

The popular new "tactic" involves the assigning of a number of Women's Army Corps personnel to CDEC to perform a variety of administrative duties. The CDEC "Unit of Choice" recruiters are currently looking for forty WACs to work in various administrative positions within the command and they hope to expand this number to 101 within the next year.

The WACs will be working in eight different challenging occupational skills: administrative specialist, personnel specialist, card and tape writers, information specialist,

clerk typist, supply clerk, unit supply specialist and intelligence analyst.

The WACs choosing CDEC under the Unit of Choice program will be guaranteed 16 months of duty in CDEC at Fort Ord after they have completed Basic and Advanced Individual Training.

The CDEC recruiters, as well as CDEC soldiers, are hoping that Fort Ord's proximity to San Francisco and the vacation-like atmosphere of the Monterey Peninsula where Fort Ord and CDEC is located, will be motivation factors enticing girls to select the CDEC enlistment program.

The area around Fort Ord offers practically everything an adventure-some girl could ask for. If it's sandy beaches she likes, she has her choice of practically any type from the secluded areas of Big Sur to the Riviera-like Santa Cruz beach. If she goes for quaint European towns, Carmel-by-the-Sea is difficult to distinguish from the real thing. Historic Cannery Row in Monterey is only one of many interesting sights if she just enjoys sight-seeing.

Whatever she likes, she should be able to find it during her tour with CDEC and early reports of enlistees under the program indicate that quite a few girls are going to be taking advantage of the opportunity.

## MBT Symposium

Ft. Knox, Ky. . . . In keeping with the policy of the Armor Community of getting the enlisted user involved in the developmental process, the Main Battle Tank Task Force located at Fort Knox, Kentucky, hosted a noncommissioned officer symposium during the period 11-13 July 1972, to discuss the draft proposed materiel need (DPMN)



document for the main battle tank. This symposium brought together some of the most experienced non-commissioned officers from Armor units in CONUS and Europe. Attendees were: 1st Sgt Robert Moore and PSG Csaba Kofalvi, of the 194th Armored Brigade, Fort Knox; SFCs Charlie J. Jacobs and Harold E. Crewe of the United States Army Armor School, Fort Knox, Kentucky; PSGs Helmut Grossinger and Charles F. Cox of the 1st Cavalry Division, Fort Hood, Texas; SFCs Marion Foster, Ricardo Resendez and Leonard Gilchrist of the 4th Infantry Division, Fort Carson, Colorado; SFCs Clinton Griffin and William Beatty of the 2d Armored Division at Fort Hood, Texas. Representing USAREUR units at the symposium were 1st James Melton of the Third Armored Division and PSG Jesse Hines of the 1st Armored Division.

The purpose of the noncommissioned officer symposium is to allow the CDC community to take advantage of the expertise, knowledge, and hands-on experience of qualified noncommissioned officers. The non-commissioned officers are extremely eager to get involved. They feel that they're the ones in the long run who will be required to operate, live with and fight with an item of equipment so they should definitely be involved in its development.

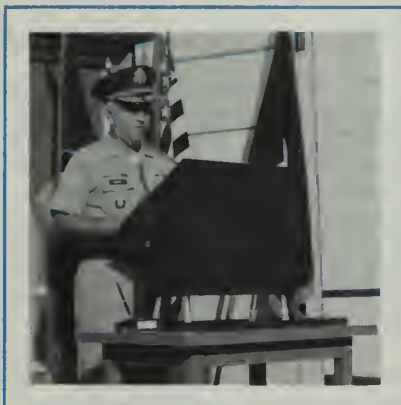
The Armor Community feels that the professional noncommissioned officer corps is a relatively untapped reservoir of information, knowledge, and experience which must be exploited in order to keep up with the trends of the modern professional Army.

The symposium was officially opened by Colonel Charles K. Heiden, who welcomed the NCOs and explained the purpose of the symposium. He was followed by various individuals who explained the research, development, test and evaluation process; the Main Battle Tank Task Force operation; role and functions of the project manager's office; new tank philosophy; a briefing on the draft proposed materiel need document and contractor configurations. These briefings, as well as an orientation on the M60A2 tank and viewing of a new type commander's hatch, were necessary in order to bring the NCOs "up to speed" on just how far the Task Force has gone and to acquaint them with the process as well as "state-of-the-art."

Following the briefing, the NCOs formed two working groups to discuss with Task Force project officers ideas pertaining to firepower, mobility, protection, reliability, maintainability, main armament, fire control, engines, transmissions, human engineering, communications, CBR protection and maintenance aspects of the MBT.

The symposium lasted three days and was terminated 13 July 1972 by Colonel Heiden who expressed his appreciation to the NCOs for their participation. Many ideas, which otherwise may have been lost, were surfaced and will be considered when the final materiel need document is written.

### *Change of Command*



Ft. Belvoir, Va. . . . On 21 August 1972 a farewell ceremony was held at the Intelligence and Control Systems Group for BG Edward F. Gudgel, Jr., who has been reassigned as CG, COMS Group. The ceremony climaxed an assignment during which BG Gudgel effectively organized INCS Group with a greatly expanded mission. Under the direction of BG Gudgel, the various elements of the Army's intelligence needs were consolidated under INCS Group, along with the areas of command, control, communications, and tactical data systems. The ceremony was highlighted by an address by BG Gudgel, presentation of the INCS farewell gift, and coffee and cake on the grounds. COL A. J. Vitullo assumed command pending the arrival of BG Fremont B. Hodson, Jr., who will become the commanding General.

### *New Commander*



The United States Army Combat Developments Command Intelligence and Control Systems Group, Fort Belvoir, Virginia, has a new commanding general.

Brigadier General Fremont B. Hodson, Jr., succeeded Brigadier General Edward F. Gudgel, Jr., who has been reassigned as CG, COMS Gp. General Hodson's new command includes INCS Headquarters and two subordinate agencies—the Communications-Electronics Agency, and the Intelligence Agency. General Hodson, who was born in Vancouver Barracks, Washington, received his commission through Transportation Corps OCS in June 1945.

Among the many assignments held by General Hodson are Commanding Officer 625th Port Company, and Headquarters Companies of the 620th and 52d Medium Port Battalions, Far East Command; Company Commander and Battalion S-3, 32d Infantry Regiment, 7th Infantry Division, Korea; Commanding Officer, 1st Battalion, 5th Infantry, 25th Infantry Division, Vietnam; Commanding Officer 1st Brigade, 25th Infantry Division, Vietnam; and Director, Planning and Evaluation Directorate and STANO Materiel Directorate, Hq, MASTER, Ft. Hood, Texas. BG Hodson has twice served as an aide-de-camp.

The general has a BGE degree from the University of Omaha and has done graduate work at George Washington University. He has also completed the mid-career course of

the Foreign Service Institute of the Department of State. Military schooling includes the Infantry Officer Advance Course, the Command and General Staff College, the Armed Forces Staff College, and the Industrial College of the Armed Forces.

Among the personal decorations held by the INCS Commanding General are the Silver Star with Oak Leaf Cluster, Legion of Merit with three Oak Leaf Clusters, Distinguished Flying Cross, Soldier's Medal, Bronze Star Medal with "V" Device and Oak Leaf Cluster, the Purple Heart, and two awards of the Combat Infantryman's Badge.

Brigadier General Hodson's last assignment was Chief of Staff, III Corps and Fort Hood, Fort Hood, Texas.

### *First and Last*



Ft. Monmouth, N.J. . . . Major General Curtis W. Chapman, CDC Deputy Commander and Brigadier General Edward F. Gudgel, Commander of CDC's Intelligence and Control Systems Group, recently visited CDC's Communications-Electronics Agency.

This was General Chapman's initial visit to CEA. He received a series of briefing on the functions and operations of the Fort Monmouth based agency.

The event also marked the last visit for Brigadier General Gudgel who has been reassigned to Fort Leavenworth as the new COMS Group Commander. Above, center and right, Generals Gudgel and Chapman listen intently to a CEA briefing officer. COL James P. Mattern (shown at far right) CEA Commander hosted the visit.

### *Award*



FT. RUCKER, ALA. . . . An armament equipment specialist from Daleville, Ala., has been named Ft. Rucker's Civil Service Employee for Fiscal Year 1972.

John N. Garbarini, a veteran of over 30 years of Federal service, was nominated for the post's highest civilian employee honor by the Army Aviation Combat Development Command Aviation Agency (CDC). He has been working with CDC since February 1968.

In a ceremony in the office of Major General Allen M. Burdett, Jr., commanding general of Rucker, Garbarini was presented a Certificate of Achievement and an Aviation Center plaque. (above)

Calling it a "great occasion," Maj. Gen. Burdett paid tribute to Garbarini's achievements and record.

The certificate cited some of these achievements and community activities upon which the selection of Civil Service Employee of the Year is also based.

It read, in part, "Mr. Garbarini continually provides expert advice and guidance in the field of aircraft armament, projecting his thinking far into the future to insure utilization of the latest state of the art technology. In addition to his normal duties, Mr. Garbarini is the

current president of the Daleville Board of Education and the president of the American Junior Bowling Association of Ft. Rucker, as well as an active member of the Daleville Lions Club and the Optimist Club."

Coming to Ft. Rucker in 1963 after retiring from the Navy, Garbarini was first assigned to the Army Aviation Test Board. There he provided technical assistance to the 11th Air Assault Division concerning aircraft armament. He also was involved in service testing and military potential testing of many of the helicopter weapon systems in being today, in addition to developing a boresight tool for boresighting the 40-mm grenade launcher used on the M-5 subsystem, saving the Army \$12,000. He also was involved in the Army preliminary evaluation of the AH-1G "Cobra" helicopter.

At CDC, Garbarini has prepared actions for aircraft weapons systems which included research for development of concepts and performance characteristics for several armament systems and subsystems.

He also had prepared two requirements documents which will provide Army aviation an added capability. These are the Selective Effects Armaments Subsystem which is a follow on to the present 2.75-inch rocket and the Fire and Forget Antitank Weapon System. This system will incorporate a dual mode seeker which will allow the launching helicopter to take evasive maneuvers immediately after launch. The single seeker laser is currently being tested by the Army Missile Command. It is known as the Hellfire missile.

Officials at CDC pointed out also that Garbarini "has constantly demonstrated his ability to represent the Combat Developments Command at conferences with the U.S. Army Aviation Center, with other higher command organizations, and with industry."



# General Schweiter

The United States Army Combat Developments Command was saddened by the news of Major General Leo Schweiter's death on 23 August 1972. General Schweiter was CDC's Deputy Commanding General from March 1969–Sept. 1971 before assuming the position of Chief of Staff of the Army in Vietnam. He retired from active Army service in May of this year.

Born in Wichita, Kansas, General Schweiter was a graduate of Kansas State College and held a master's degree from the University of Missouri.

He enlisted in the Army Air Corps in 1941 and served in the European Theater with the 101st airborne division during World War II.

General Schweiter was assigned to the 82d Airborne Division in 1945 and after combat during the Korean War was a member of the joint airborne troop board.



In 1959, after a tour of duty in Europe, he was named Chief of Staff of the 8th Infantry Division. He later was Assistant Chief of Staff, G2, Headquarters, XVII Airborne Corps.

In 1961, he was named Commanding Officer of the 5th Spe-

cial Airborne Force Group, 1st Special Forces.

General Schweiter served in Washington from 1962 to 1964 in the Office of Special Assistant for Counterinsurgency and Special Activities for the Joint Chiefs of Staff. During the next two years, he was in the Office of the Deputy Chief of Staff for Operations.

He later was at Ft. Campbell, Kentucky, then was sent to Vietnam. He returned to this country in 1969 to become Deputy Commanding General of the Army Combat Developments Command at Ft. Belvoir, Va., before becoming Chief of Staff of the Army in Vietnam.

His many decorations included the Distinguished Service Medal, the Silver Star, the Distinguished Flying Cross and the Bronze Star.

He is survived by his wife, Virginia, and four children, James, Gail, Mary Jean and Caroline, all of Carlisle, and his Mother, Mrs. Otto Schweiter, of Wichita.

---

Commanding General  
Director,  
Command Presentations  
Information Officer  
Editor  
Production Editor

LTG John Norton  
COL George H.  
Hallanan, Jr.  
LTC Gerald D. Hill, Jr.  
LT Robert H. Gregory  
LT Gary R. Steimer

---



FLARE

